AR Modular Wireless

Installation and Operation Manual

Manual de la instalación y de la operación

Manuel d'installation et d'opération

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GETTING STARTED

Congratulations on your purchase of the AR Modular Wireless system, the first expandable modular system capable of delivering high quality wireless transmission to a complete 5.1 channel home theater. The AR Modular Wireless system is designed to provide you with years of reliable, trouble-free service.

ARW51 Contents List

- 5 x 2.4 GHz Amplified Receivers (ARWR2)
- 1 x 5.1 Channel, 2.4 GHz Transmitter (ARWT1)
- 1 x 2.4 GHz Subwoofer Receiver (ARWS3)
- 5 x AC-DC Adaptors (INPUT AC 100-240V OUTPUT DC 26V 2.5A)
- 5 x Power Cords
- 2 x AC-DC Adaptors (INPUT AC 100-240V OUTPUT DC 12V 1.2A)
- 1 x Owner's Manual including Warranty Statement
- 1 x Product Registration Card for Online Registration
- 1 x eMusic Download Card
- 6 x Stands for Receivers

ARW20 Contents List

- 1 x 5.1 Channel, 2.4 GHz Transmitter (ARWT1)
- 2 x 2.4 GHz Amplified Receivers (ARWR2)
- 2 x AC-DC Adaptors (INPUT AC 100-240V OUTPUT DC 26V 2.5A)
- 1 x AC-DC Adaptor (INPUT AC 100-240V OUTPUT DC 12V 1.2A)
- 1 x eMusic Download Card
- 1 x Product Registration Card for Online Registration
- 1 x Owner's Manual including Warranty Statement
- 2 x Power Cords
- 2 x Stands for Receivers

ARWR2 Contents List

- 1 x 2.4 GHz Amplified Receiver (ARWR2)
- 1 x AC-DC Adaptor (INPUT AC 100-240V OUTPUT DC 26V 2.5A)
- 1 x eMusic Download Card
- 1 x Power Cord
- 1 x Product Registration Card for Online Registration
- 1 x Owner's Manual including Warranty Statement
- 1 x Stand for Receiver

ARWS3 Contents List

- 1 x 2.4 GHz Subwoofer Receiver (ARWS3)
- 1 x AC-DC Adaptor (INPUT AC 100-240V OUTPUT DC 12V 1.2A)
- 1 x eMusic Download Card
- 1 x Product Registration Card for Online Registration
- 1 x Owner's Manual including Warranty Statement
- 1 x Stand for Receiver

AR Modular Wireless System

IMPORTANT SAFETY INSTRUCTIONS

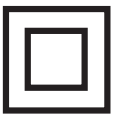
THE LIGHTNING FLASH AND ARROWHEAD WITHIN THE TRIANGLE IS A WARNING SIGN ALERTING YOU OF "DANGEROUS VOLTAGE" INSIDE THE PRODUCT.	**CAUTION** RISK OF ELECTRIC SHOCK DO NOT OPEN CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.	THE EXCLAMATION POINT WITHIN THE TRIANGLE IS A WARNING SIGN ALERTING YOU OF IMPORTANT INSTRUCTIONS ACCOMPANYING THE PRODUCT.
SEE MARKING ON BOTTOM / BACK OF PRODUCT		

WARNING: TO PREVENT FIRE OR ELECTRIC SHOCK HAZARD, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE.

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with a damp cloth.
7. Do not block any of the ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus including amplifiers that produce heat.
9. Do not defeat the safety purpose of the polarized-type plug. A polarized plug has two blades with one wider than the other. The wide blade is provided for your safety. When the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plug, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with a cart, stand, tripod, bracket, or table specified by the manufacturer or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.

13. Unplug this apparatus during lighting storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as when the power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

15. The apparatus shall not be exposed to dripping or splashing and that no objects filled with liquids, such as vases, shall be placed on the apparatus.
16. Do not overload wall outlet. Use only power source as indicated.
17. Always leave sufficient space around the product for ventilation. Do not place product in or on a bed, rug, in a bookcase or cabinet that may prevent air flow through vent openings.
18. Do not place lighted candles, cigarettes, cigars, etc. on the product.
19. Care should be taken so that objects do not fall into the product.
20. The MAINS plug is used as the disconnect device and shall remain readily operable.
21. Where there is more than one connection supplying HAZARDOUS VOLTAGES or HAZARDOUS ENERGY LEVELS to equipment, a prominent marking, located close to the entry point provided for a SERVICE PERSON to gain access to the hazardous parts, shall be provided to indicate which disconnect device or devices isolate the equipment completely and which disconnect devices can be used to isolate each section of the equipment.
22. Use the Adaptor which we provided and do not replace them at discretion.



This symbol indicates that this product incorporates double insulation between hazardous mains voltage and user accessible parts.

WARNING: THE MANUFACTURER IS NOT RESPONSIBLE FOR ANY RADIO OR TV INTERFERENCE CAUSED BY UNAUTHORIZED MODIFICATIONS TO THIS EQUIPMENT. SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THIS EQUIPMENT.

COMPLIANCE WITH FCC REGULATIONS: This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.

- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

A Class II APPARATUS shall be permanently marked with the words "DOUBLE INSULATION" or "Double Insulated" and "When servicing use only identical replacement parts."

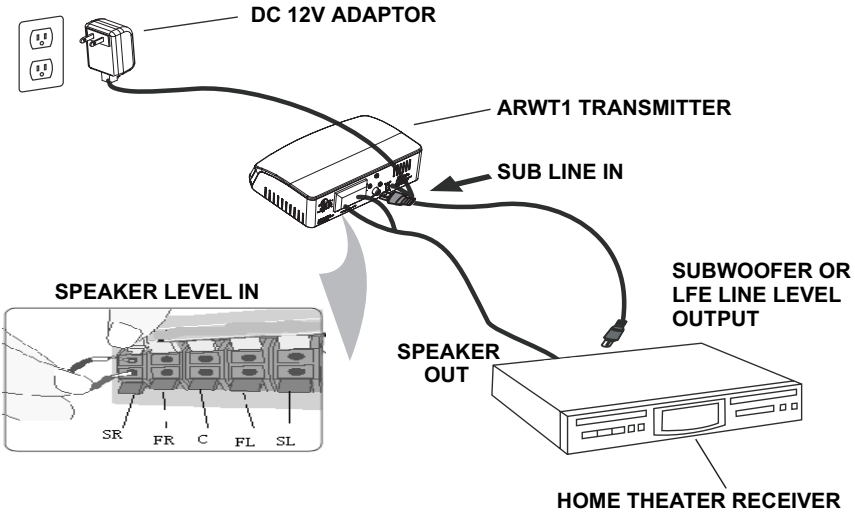
This Class B digital apparatus complies with Canadian ICES-003.

This apparatus contains a module with FCC ID: RFAARW51 and IC: 7186A-ARW51.

QUICK SETUP INSTRUCTIONS

The ARW51 and ARW20 systems come pre-linked from the factory. The channels are already assigned to each receiver, indicated by the peel-off tabs on the receiver.

1. Place each receiver near its respective speaker in your room.
2. Attach the Receivers to your speakers, being careful to maintain polarity.
   - For the ARWR2 Amplified Receivers, use a standard 2-conductor speaker wire to attach to the speaker.
   - For the ARWS3 line level Subwoofer Receivers, use a standard RCA cable to go from the ARWS3 to your powered subwoofer's LINE, LFE or Sub input connector.
3. Plug in the AC-DC power Adaptors to a convenient AC power outlet and then plug the DC jack into each receiver.
4. Turn off the power to your Home Theater Receiver and place the ARWT1 Transmitter in a convenient nearby location. *NOTE: The ARWT1 Transmitter should not be placed near a significant source of heat as this may cause damage to the transmitter's circuitry.*
5. Attach the source's speaker and/or line level outputs to the ARWT1 transmitter's speaker and line level inputs.
   - Depending on your system configuration, you may not use all channels.
   - Be sure to leave your Home Theater Receiver's power OFF during this process to prevent damage from accidentally shorting the speaker wires.
6. Plug in the Transmitter's AC-DC power adaptor and plug the DC jack into the back of the ARWT1 Transmitter. The transmitter will go through a short initialization process and then automatically link to each Wireless Receiver in the system.
7. If you have purchased additional ARWR2 or ARWS3 Receivers, you will need to manually link them to your preferred channel. See the complete linking description that follows in this Owner's Manual.



AR Modular Wireless System

FEATURES

The AR Modular Wireless system is a full 5.1 channel expandable transmitter/receiver system operating at 2.4GHz. The system uses a variety of methods to provide you with high resolution, low noise uninterrupted audio. An adaptive "sniff-before-transmit" algorithm continually checks the operating band for interference from wireless networks, cordless phones, microwave ovens and other devices. This allows the system to anticipate interference before it happens so it can jump to an adjacent band. The system uses an advanced process called Direct Sequence Spread Spectrum (DSSS) to quickly find the next available free band without losing data. Unlike many wireless systems, the AR Modular Wireless uses transceivers at both the transmitter and receiver end. This technology allows each receiver to have its own dedicated communications channel for delivering Quality of Service (QoS) information back to the transmitter, or to request retransmission of lost or corrupted packets, determine channel assignments and serve as a secondary method of measuring interference. The AR Modular Wireless systems transmits 6 channels of uncompressed CD-quality audio at 16 bits, 44.1kHz sampling rate for a combined bandwidth of over 4 Megabit/second. The system uses an additional 7 Megabit/second of bandwidth to perform continuous QoS analysis for high interference immunity. As a result of the high bandwidth capacity, the AR Modular Wireless system can operate at an extremely low latency, typically less than 14 msec, without loss of signal integrity. Advanced load-shunt power regulators in the transmitter keep digital switching noise out of the analog inputs. In addition, a fully digital signal path is used within the ARWR2 Amplified Receiver to dramatically reduce hiss, clicks, pops and other noise inherent in many other wireless systems. The AR Modular Wireless system can use high powered amplifiers in the ARWR2 receiver and connect to high powered subwoofers with the ARWS3 receiver.

The AR Modular Wireless system is made up of three main components:

- ARWT1 5.1 channel transmitter with 5 speaker-level spring-clip inputs (max 15.5VRMS) and 1 line level RCA Subwoofer/LFE input (max 1.4VRMS)
- ARWR2 Amplified Receiver module with an efficient, high power Class D amplifier capable of delivering over 60W RMS into a 4 ohm speaker load
- ARWS3 Line Level Subwoofer/LFE module with an RCA output for driving powered subwoofers

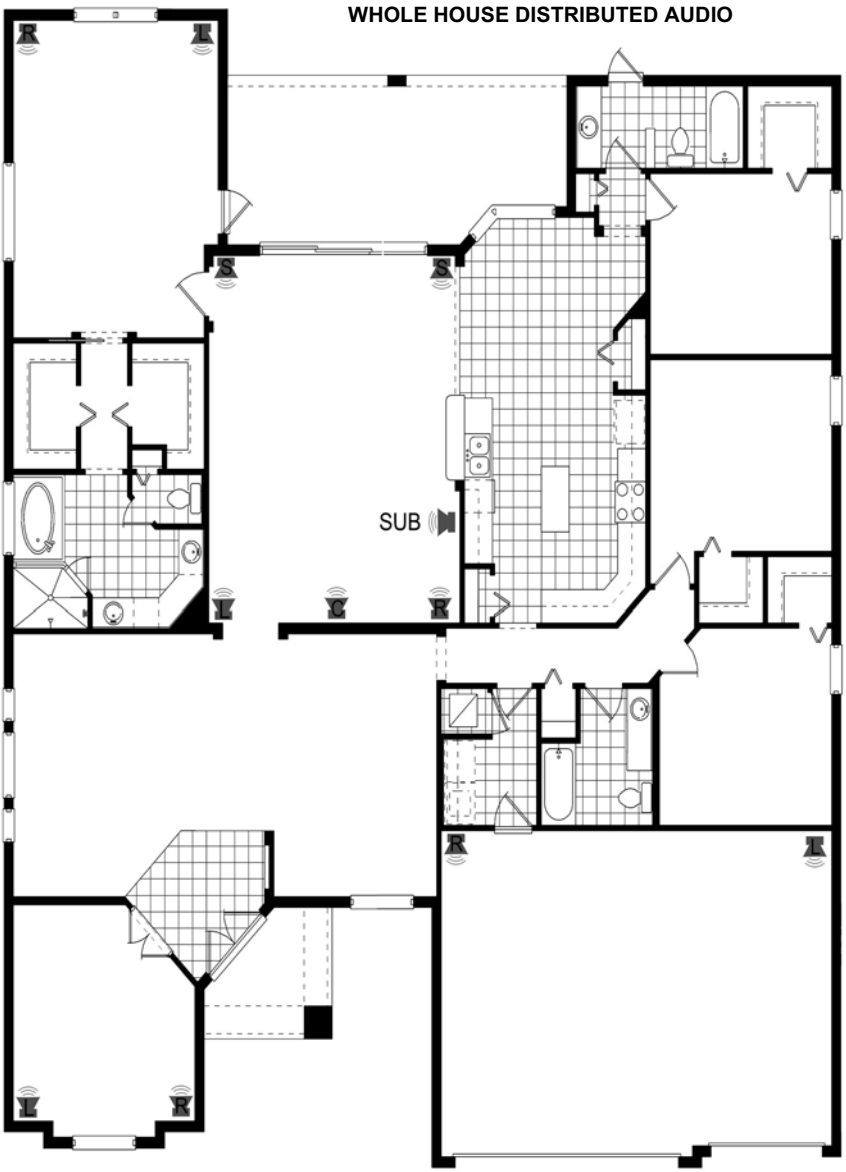
The AR Modular Wireless system employs a unique linking system that allows you to link any receiver to any channel, and even multiple receivers per channel. You may link up to 6 receivers per channel without loss of signal integrity. The channels on the ARWT1 are labeled with the common surround channel designations (Surround Left, Front Left, Center, Front Right, Surround Right and Sub Line In) but they can be used for any purpose. The transmitter's 5 speaker level inputs are all full-range inputs using high quality ADCs (Analog to Digital Converters) to convert your receiver's speaker outputs to 16 bit 44.1kHz uncompressed CD quality digital sound. The Subwoofer or LFE line-level input uses the same high quality ADCs, but is bandwidth-limited specifically for subwoofer use. Though not normally recommended, any ARWR2 receiver may also be linked to the transmitter's line level subwoofer channel and may be used to drive a small non-powered subwoofer with its internal 60W amplifier.

Likewise, any ARWS3 receiver may be linked to any speaker-level channel. The ARWS3 receiver will produce a bandwidth-limited signal (below 250Hz) that is 1/10th the output voltage of the input to that speaker-level input. For instance if you have 10VRMS going into the speaker level input, the ARWS3 will produce 1VRMS. This is useful for situations where a line level subwoofer output is desired from a speaker level input.

The unique linking ability allows you to create additional configurations beyond a standard 5.1 surround sound system:

- You may purchase additional ARWR2 Amplified Receivers and link them to the Front Left and Front Right channels. These modular receivers can be placed anywhere within range, making this configuration ideal for whole-house distributed audio without wires.
- The system may be configured to run 3 wireless surround speakers and the subwoofer in a 6.1 channel system. With this configuration, you may prefer to use your receiver's power amplifier to drive the front three speakers through regular wires, leaving two channels of the ARWT1 open for use as a "Zone 2" system or any other application.
- Since each of the 5 channels are general purpose, you can install a full 8.1 system, using the ARW51 to provide 5 wireless surround speakers and your receiver's power amplifier to drive the front three speakers through regular wires.
- The ARW20 comes with only two ARWR2 Amplified Receivers and is generally used to make your rear surround speakers wireless in a conventional 5.1 system. However, the ARWT1 Transmitter is capable of expanding to cover the full 5.1 system. Add a third ARWR2 Amplified Receiver to create a cost-effective wireless system for three surround speakers in a 6.1 configuration, or to make a front speaker wireless in a case where running wires to one of the front speakers is difficult due to a fireplace or other obstruction. You can also purchase an ARWS3 wireless subwoofer receiver to make your subwoofer wireless.

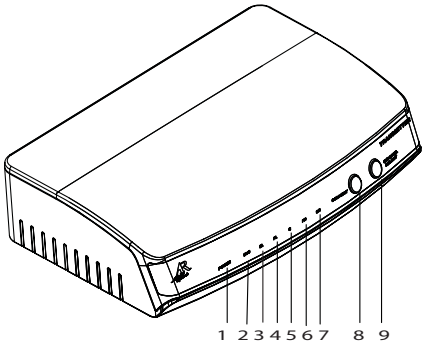
AR Modular Wireless System



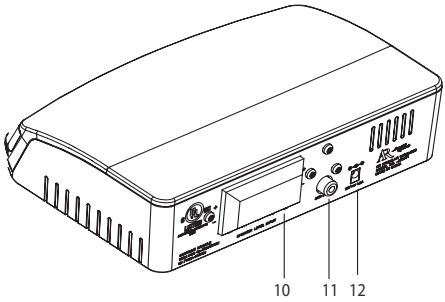
CONTROL LOCATIONS

Transmitter

FRONT OF TRANSMITTER



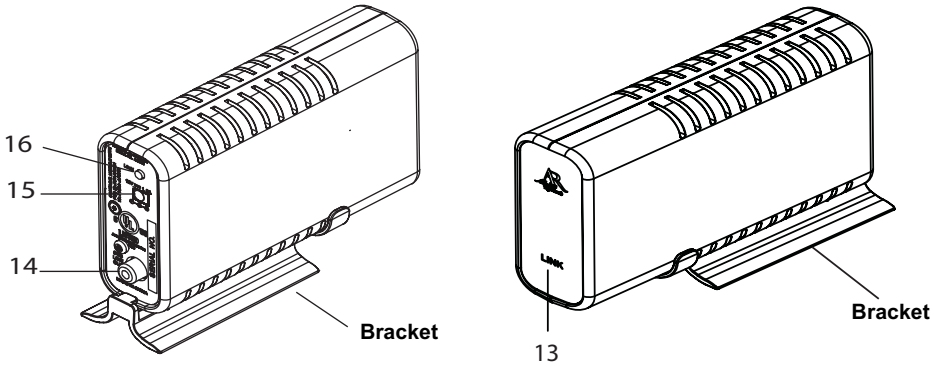
BACK OF TRANSMITTER



1. POWER (LED indicator):
   When the 12V adaptor is plugged into the DC Jack, the POWER indicator turns green.
2. SUB (LED indicator):
   When the subwoofer channel is linked to a wireless receiver, the SUB indicator turns green.
3. SL (LED indicator):
   When the Surround Left (SL) channel is linked to a wireless receiver the SL indicator turns green.
4. FL (LED indicator):
   When the Front Left (FL) channel is linked to a wireless receiver the FL indicator turns green.
5. C (LED indicator):
   When the Center (C) channel is linked to a wireless receiver the C indicator turns green.
6. FR (LED Indicator):
   When the Front Right (FR) channel is linked to a wireless receiver the FR indicator turns green.
7. SR (LED indicator):
   When the Surround Right (SR) channel is linked to a wireless receiver the SR indicator turns green.
8. CONNECT button:
   Press this button to enter linking mode. See complete description of linking process on page 15.
9. CHANNEL SELECT button:
   Press this button to select the next channel (SUB-> SL -> FL -> C -> FR -> SR). See complete description of linking process on page 15.

10. Speaker Level in (Spring type terminal x 5: SR, FR, C, FL, SL):
    Connect speakers using up to five channels of spring clips with a maximum input voltage of 15.5VRMS.
11. SUB LINE IN:
    Subwoofer Line Level Input or RCA input with a maximum input voltage of 1.4VRMS.
12. DC 12V 1.2A:
    Insert the DC 12V/1.2A AC-DC Adaptor plug.

ARWS3 Subwoofer Receiver

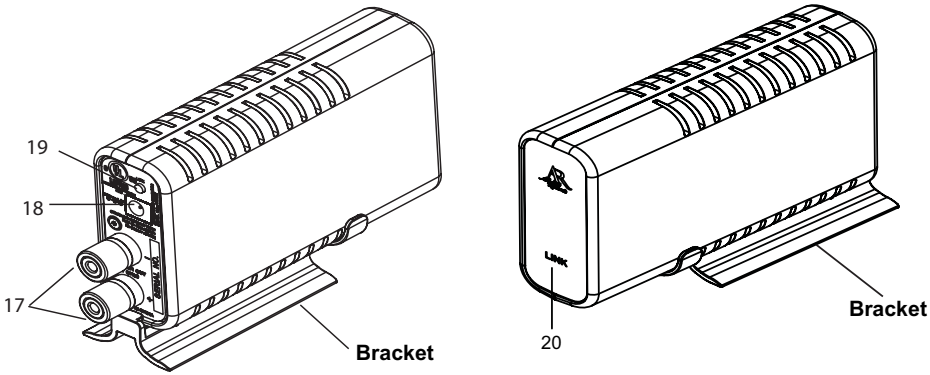


13. LINK (LED indicator):
    When the power is plugged in but the receiver is not linked to a transmitter the LINK text will glow red. When the receiver is linked to a transmitter the LINK text will glow green. If the LINK text is blinking red-green this indicates the system is in the process of linking.
14. SUB LINE OUT:
    Connect the RCA output to a powered subwoofer with a line level or LFE input. The maximum output voltage is 1.4VRMS.
15. DC 12V 1.2A:
    Insert the DC 12V/1.2A AC-DC Adaptor plug.
16. LINK button:
    Press this button to connect the ARWS3 Receiver to the Transmitter. See complete description of linking process on page 15.

ARWR2 Receiver with Amplifier

The front of the ARWR2 Receiver with Amplifier is the same as ARWS3 Subwoofer Receiver. The back is different.

ARWR2 RECEIVER WITH AMPLIFIER



17. SPEAKER OUT:
    Connect to a speaker with an impedance from 4 to 8 ohms. Connecting to a speaker with an impedance less than 4 ohms may cause damage to the power amplifier.
18. DC 26V 2.5A:
    Insert the DC 26V/2.5A AC-DC Adaptor plug.
19. LINK button:
    Press this button to connect the ARWR2 Receiver with Amplifier to the Transmitter.
20. LINK (LED indicator):
    When the power is plugged in but the receiver is not linked to a transmitter the LINK text will glow red. When the receiver is linked to a transmitter the LINK text will glow green. If the LINK text is blinking red-green this indicates the system is in the process of linking. See complete description of linking process on page 15.

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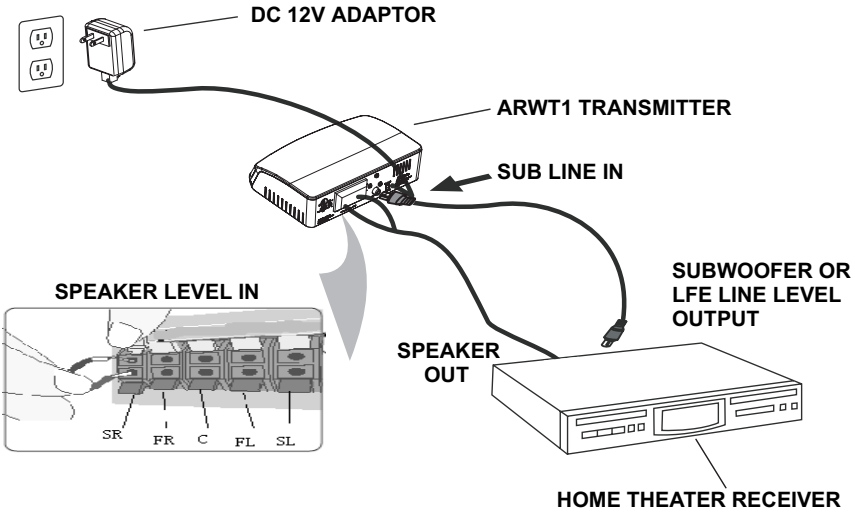
INSTALLING THE ARWT1 TRANSMITTER

Follow the instructions below to properly set up the Transmitter to send a wireless signal to the ARWS3 Subwoofer Receiver or ARWR2 Receiver with Amplifier.



Connecting to your Device

1. Connect an RCA cable from the SUBWOOFER or LFE Line Level output of your home theater receiver to the SUB LINE IN connector on the ARWT1 transmitter.
2. There are five Speaker Level inputs on the back of the ARWT1 transmitter, allowing easy connection of a home theater receiver. Press each plastic finger pad to open the connection terminals on the back of the ARWT1 and insert the end of the speaker wire with the insulation removed to approximately 3/8" (10mm). Release the finger tab to secure the wire. Ensure that the wires are held securely in place and no strands of wire are touching any adjacent wire. Pay careful attention to wire polarity, the black terminals are negative. Each terminal is electrically isolated from the others, do not place a jumper wire across any terminal as this may cause damage to the unit.
   The maximum input voltage is 15.5VRMS. The receivers are equipped with Anti-clipping protection to reduce audible distortion. If the input substantially exceeds 15.5VRMS, the receiver linked to this channel may distort or temporarily turn off to protect itself and the speaker from damage.

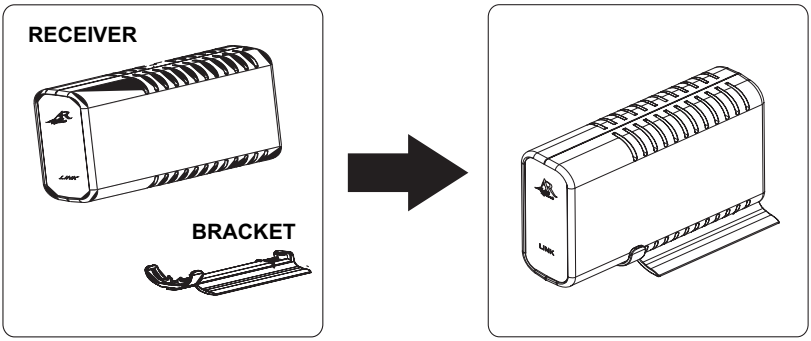
Connecting Power

Connect the DC plug from the AC-DC Adaptor to a the back of the transmitter and then plug the AC-DC Adaptor into a conveniently located wall outlet.

INSTALLING THE RECEIVER

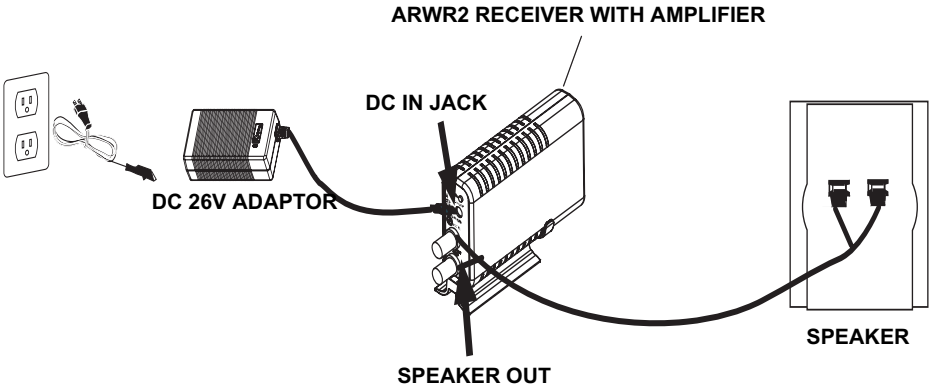
Installing Receiver and Bracket

Connect the receiver to the bracket as shown below. First place the rear "hook" over the small lip on the back of the receiver with the receiver angled up in the front, then press down lightly on the front of the receiver. The receiver will snap into place and may be removed if desired.



Installing the ARWR2 Receiver with Amplifier

1. CONNECTING TO THE SPEAKER
   Connect a 2 conductor speaker cable (not included) from the Speaker Out on the receiver to the speaker. Use the red cable to connect the “+” (plus) and connect the the other end to the black terminals marked “-” (minus). Pay careful attention to wire polarity at the receiver and at the speaker.
2. CONNECTING POWER
   Insert the DC 26V/2.5A AC-DC Adaptor plug into the DC In Jack located on the back of the ARWR2 Receiver with Amplifier. Plug the other end of the AC-DC Adaptor into a conveniently located electrical wall outlet.



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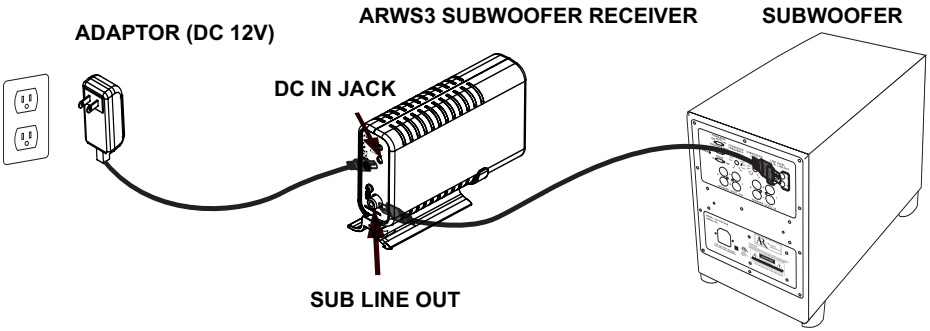
Installing the ARWS3 Subwoofer Receiver

1. CONNECTING TO THE SUBWOOFER
   Connect an RCA cable from the SUB LINE OUT of the ARWS3 Subwoofer Receiver to the LFE or Line level input of your subwoofer. The ARWS3 does not have a power amplifier and must be connected to a powered subwoofer to work properly. Do not connect the RCA output directly to a low impedance speaker load as this may cause damage to the system.
2. CONNECTING POWER
   Insert the DC 12V AC-DC Adaptor plug into the DC Jack on the rear of the ARWS3 Subwoofer. Plug the other end of the AC-DC Adaptor into a conveniently located electrical wall outlet.



OPERATION

Linking Instructions

The ARW51 and ARW20 systems are prelinked from the factory so normally no relinking is necessary. If you decide to use the system in a different configuration, the relinking process is very straightforward. Any receiver may be linked to any transmitter channel and you may link up to 6 receivers per transmitter channel. The system remembers linking settings in the case of power outages and will automatically re-link when power is restored. If you make a mistake or later decide to change the linking configuration, simply go through the linking procedure again and assign the receiver to it's new channel.

For linking in systems with a maximum of one receiver assigned to each transmitter channel, use the following procedure:

1. Press CHANNEL SELECT on the transmitter until the green LED blinks slowly on the channel you wish to link to a receiver. The transmitter cycles through the channels from left to right: SL->FL->C->FR->SR->SUB.
2. Press CONNECT on the transmitter. The LED for the selected channel will blink quickly and audio transmission will be interrupted.
3. Press the LINK button on the back of the ARWR2 or ARWS3 Receiver to link to the selected channel. The receiver's LED will blink alternating red and green until it has made a secure connection. Once the connection is made the receiver's and transmitter's LED for that channel will turn solid green and the units will be linked. Audio transmission will resume once the units are linked.

For linking in systems with two or more receivers per transmitter channel, there is a slightly different linking method:

1. Press CHANNEL SELECT on the transmitter until the green LED blinks slowly on the channel you wish to link to a receiver. The transmitter cycles through the channels from left to right, i.e. SL->FL->C->FR->SR->SUB.
2. Press the LINK button on the back of the ARWR2 or ARWS3 Receiver to link to the selected channel. The receiver's LED will blink alternating red and green for up to 30 seconds, indicating it is trying to link to your ARWT1 Transmitter.
3. Press CONNECT on the transmitter. The LED for the selected channel will blink quickly until it has made a secure connection. Once the connection is made the receiver's and transmitter's LED for that channel will turn solid green and the units will be linked.
4. Repeat steps 2 and 3 to link additional receivers to the same transmitter channel. The system will continue to link receivers to the same transmitter channel until you press CHANNEL SELECT to move to the next channel. You may link up to 6 receivers per transmitter channel without loss of signal integrity.

Each channel can link to up to 6 individual receivers of either type (ARWS3 Subwoofer Receiver or ARWR2 Amplified Receiver). You can add additional receivers to any channel at any time without losing the existing links. For example, if you want to use your system to distribute audio throughout the house, you can purchase additional ARWR2 amplified receivers. You can place the additional receivers anywhere indoors within range of the transmitter, and then link them to any channel on the transmitter.

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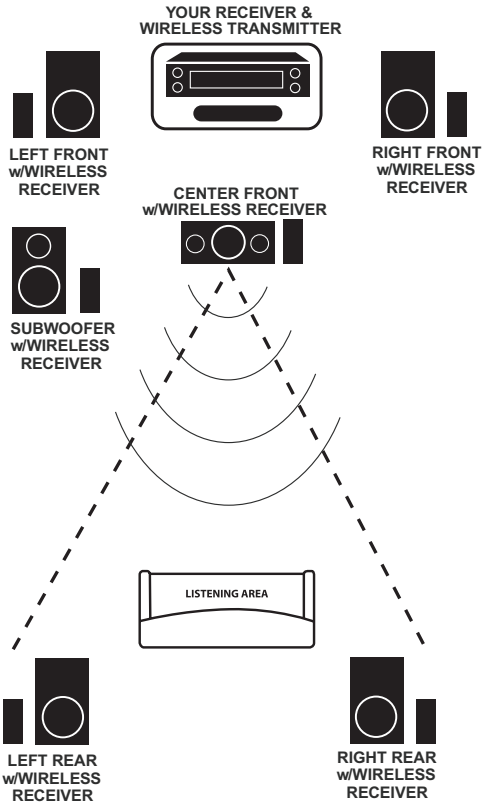
You can use the RESET function to erase all linked channels. For the transmitter, unplug the DC power cord, *press and hold* CONNECT and CHANNEL SELECT simultaneously, then plug the DC power cord back into the transmitter. Wait 5 seconds and release the buttons. The POWER indicator will turn green. For the receivers, unplug the DC power cord, *press and hold* LINK and then plug in the DC power cord. Wait 5 seconds and then release the LINK button. The link indicator will turn red.

NOTE: Be sure to turn the Transmitter and Receivers off when not in use.

Time Alignment and Latency

Home Theater systems are very sensitive to the overall time alignment of each speaker. Some speakers will be closer to you than others, depending on your position in the room. See adjacent diagram for a common room arrangement in a 5.1 home theater configuration.



The rear speakers are substantially closer than the front speakers, so in a normal wired system the sound from the rear speakers would arrive at your ears sooner than the front speakers. The difference in time is approximately equal to 1 millisecond (abbreviated 1ms) per foot of distance. So for the below example, the front left (FL) and front right (FR) speakers are 12 feet from the listening position. The center speaker (C) is 10 feet from the listening position, and the surround left (SL) and surround right (SR) are both 6 feet from the listening position.

Home Theater Receivers can configure the time delay in two different ways, either by requiring you to enter the total distance from each speaker to the listening position, or by requiring you to enter the total time delay required for each speaker. The first method is much more common and easier to understand. The second method requires calculation and is a bit more complicated.

Distance Method

In a non-wireless arrangement the numbers you would enter the distances into your Home Theater Receiver's configuration without any changes. The AR Modular Wireless system operates at approximately 14ms of latency. This latency is the time delay from when the signal enters the ARWT1 transmitter, is converted to a digital signal, transferred wirelessly to the receivers, decoded and then amplified. When configuring the time delay in your Home Theater Receiver, simply add 14 feet to the number measured in your room. So for instance if you are using an ARW20 to make your rear surround speakers wireless you would leave the front speaker delays the same, and add 14 to the rear numbers:

NON-WIRELESS	WIRELESS SURROUNDS
FL = 12 feet	FL = 12 feet
C = 10 feet	C = 10 feet
FR = 12 feet	FR = 12 feet
SL = 5 feet	SL = 19 feet
SR = 4 feet	SR = 18 feet

If you are using an ARW51 system and all of your speakers are wireless, then every speaker is delayed by the same amount. You do not need to add distance to each speaker.

Delay Method

This method is used by a relatively small number of receivers because it requires you to calculate the difference in delay between each speaker. In the above example of distances, you would calculate the difference in milliseconds of delay for each speaker and add delay only to those channels that are closer to your listening position. Please refer to your owner's manual that came with your receiver for specific instructions on this calculation. An example is below. This method can be complicated and is not normally used. The method is to take the speaker that is furthest from your listening position and subtract the distances for each other speaker. In the example below the longest distance is 12 feet. So to find the delays for each speaker subtract the distance from that speaker from 12 and this is your added time delay. Because the AR Modular Wireless system operates on 14ms of delay, you should add 14 feet to the surrounds in the below example. This usually changes the added delay substantially. In the case below, this makes the maximum effective distance 19 feet with the added delay numbers referenced from 19 milliseconds.

AR Modular Wireless System

NON-WIRELESS	NON-WIRELESS DELAY	WIRELESS SURROUNDS	WIRELESS SURROUNDS
FL = 12 feet	FL = 0ms	FL = 12 feet	FL = 7ms
C = 10 feet	C = 2ms	C = 10 feet	C = 9ms
FR = 12 feet	FR = 0ms	FR = 12 feet	FR = 7ms
SL = 5 feet	SL = 7ms	SL = 19 feet	SL = 0ms
SR = 4 feet	SR = 8ms	SR = 18 feet	SR = 1ms

As with the Distance Method, if you are using a full ARW51 system and all of your speakers are wireless, every speaker is delayed by the same amount. You do not need to add distance to each speaker.

TROUBLESHOOTING

If you follow all the instructions in this manual, you should not have problems with your ARW51 2.4GHz Wireless Audio System. However, if you cannot make the system work, please read the following troubleshooting section carefully. Do not return to your dealer before attempting to resolve the problem!

Table 1: Troubleshooting

Problem	Solution
No Sound	Be sure that the Transmitter and all Receivers are properly powered and the AC-DC Adapter Jacks are firmly plugged in. Be sure the device is turned ON and operating.
No Connection	The Receivers are placed beyond the Transmitter's effective range. Move the Receivers closer to the Transmitter.
No Power to the Receivers	Check the power supply and make sure the AC and DC sides of the power supply are plugged in properly. The Receivers have an LED light that will tell you if the Receivers are on or not. Red indicates power but no audio link, Green indicates power and an audio link.
Can Not Change the Channel	Perform a RESET function to restore to factory defaults and then re-link each receiver. Unplug the DC power cord from the transmitter, press the CONNECT and CHANNEL SELECT buttons on the front simultaneously and plug in the DC jack. Hold the buttons for 5 seconds and release. Then unplug the DC power cord from each receiver, press the LINK button on the back of the receiver, and then plug in the DC power cord. Hold the LINK button for 5 seconds and release. The indicator turns red, and you can now change the channel.
Audio Dropout	If you experience momentary loss of audio output at high volume levels, your source may be exceeding the input voltage limits of the AR Modular Wireless system. The system automatically protects the power amplifiers and your speakers by temporarily muting during transients that may cause excess distortion. Reducing the volume level of your source may resolve this issue.

AR Modular Wireless System

SPECIFICATIONS

ARWT1 5.1 Channel Transmitter

Operating Frequency	2400-2483.5MHz 2414MHz 2438MHz 2464MHz
Power Source	DC 12V 1.2A
Speaker Level In	< 15.5VRMS
Subwoofer Line In	< 1.4VRMS
Transmitter Dimensions	48mm H x 184.5mm W x 135mm D
AC/DC Adaptor (Included)	Input AC 100-240V 50/60Hz Output DC 12V 1.2A

ARWR2 Receiver with Built-in Class D Amplifier

Frequency Response	20Hz - 20kHz +/-3dB
Output Power	60W RMS @ 4 ohms, 1% thd, 1KHz +/-3dB 35W RMS @ 8 ohms, 1% thd, 1KHz +/-3dB
Distortion	< 0.1% at 1W RMS
Operating Range	100 feet (30.5m)
Receiving Frequency	2400-2483.5MHz
Speaker Impedance	4-8 ohm
Signal to Noise Ratio	70dB Output 1W
Power Source	DC 26V 2.5A
Dimensions	88.5mm H x 38mm W x 138mm D, including stand
AC/DC Adaptor (Included)	Input AC 100-240V 50/60Hz Output DC 26V 2.5A

ARWS3 Subwoofer Line Level Receiver

Frequency Response	10Hz - 150Hz +/-3dB
Output Level	1.4VRMS maximum at < 1% THD
Output Impedance	Minimum load impedance 600 ohms
Receiving Frequency	2400-2483.5MHz
Signal to Noise Ratio	65dB Output 200mV
Power Source	DC 12V 1.2A
Operating Range	100 feet (30.5m)
Dimensions	88.5mm H x 38mm W x 130mm D, including stand
AC/DC Adaptor (Included)	Input AC 100-240V 50/60Hz Output DC 12V 1.2A

1 YEAR LIMITED WARRANTY

Audiovox Electronics Corp; (the Company) warrants to the original retail purchaser of this product that has been purchased from an authorized AR dealer, that should this product or any part thereof (except as herein provided), under normal use and conditions, be proven defective in material or workmanship within 1 year from the original date of purchase, such defects will be replaced or repaired (at the Company's option) without charge for parts and repair labor.

To obtain repair or replacement within the terms of this warranty the product is to be delivered with proof of warranty coverage (e.g. dated bill of sale), specification of defect (s), transportation prepaid, to the Company at the address shown below.

THE FOLLOWING ARE NOT COVERED: Costs incurred for installation, removal or reinstallation of the product; Damage to accessories, or electrical systems; Damage caused by accident, misuse, abuse, product modification or neglect; Damage occurring during shipment; Damage resulting from improper repairs. This warranty is void if the serial number is removed. THE EXTENT OF THE COMPANY'S LIABILITY UNDER THIS WARRANTY IS LIMITED TO THE REPAIR OR REPLACEMENT PROVIDED ABOVE AND, IN NO EVENT, SHALL THE COMPANY'S LIABILITY EXCEED THE PURCHASE PRICE PAID BY THE PURCHASER FOR THE PRODUCT.

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How to Obtain Service

Please contact us at 800-225-9847 or write to:

Acoustic Research (Attention: Customer Service Department), AB Tech Services, 17C Airport Drive, Hopedale, MA 01747

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